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Certified Mail

June 14, 2010
In reply refer to SHEA-110063

Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Attention: Mr. Peter Raftery

Subject: Response to RWQCB and DTSC comments on the 2010 Interim Source Removal Action (ISRA) Work Plan Addendum Submitted in Response to California Water Code Section 13304 Order (NPDES NO. CA0001309, CI NO. 6027, SCP NO. 1111, SITE ID NO. 2040109)

Dear Mr. Raftery:

The Boeing Company (Boeing), on behalf of Boeing and the National Aeronautics and Space Administration (NASA), is providing the attached responses to Regional Water Quality Control Board (RWQCB) and Department of Toxic Substances Control (DTSC) comments on the 2010 ISRA Work Plan Addendum. This submittal includes an errata package for the 2010 Work Plan addendum consisting of revised pages of text, tables, figure and a new appendix that incorporate the responses to RWQCB and DTSC comments.

If you have any questions or require anything further, please contact Lori Blair at 818-466-8741.

Very truly yours,

Tom Gallacher
Director, Santa Susana Field Laboratory
Environment, Health, and Safety

LNB:bjc
Attachment: Response to RWQCB and DTSC Comments Memorandum

cc: Ms. Cassandra Owens, RWQCB
Mr. Rick Brausch, DTSC
Mr. Buck King, DTSC
Mr. Allen Elliott, NASA
Mr. Steve Slaten, NASA

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MEMORANDUM

TO:	Art Lenox/Lori Blair, Boeing Allen Elliott/Steve Slaten, NASA	DATE:	June 11, 2010
CC:	Randy Dean, CH2M HILL	REF:	1008208/1008209
FROM:	Dixie Hambrick/Alex Fischl, MWH		
SUBJECT:	Response to RWQCB and DTSC Comments on the 2010 ISRA Work Plan Addendum		

This memorandum provides responses to Regional Water Quality Control Board (RWQCB) and Department of Toxic Substances Control (DTSC) comments on the 2010 Interim Source Removal Action (ISRA) Work Plan Addendum (Work Plan Addendum) (MWH, 2010). The Work Plan Addendum summarizes the results of the ISRA evaluation process and presents recommended remedial actions to control releases of constituents of concern (COCs) to surface water for the remaining areas within the Outfall 009 watershed at the Santa Susana Field Laboratory (SSFL). The Work Plan Addendum supplements the Preliminary ISRA Work Plan (MWH, 2009a), the Final ISRA Work Plan (MWH, 2009b) along with other work plan addenda (MWH 2009c, MWH 2009d, MWH 2009e, and NASA, 2009). The Work Plan Addendum was prepared by MWH and CH2M HILL on behalf of The Boeing Company (Boeing) and the National Aeronautics and Space Administration (NASA) pursuant to a California Water Code Section 13304 Cleanup and Abatement Order (CAO) issued by the Los Angeles Regional Water Quality Control Board (RWQCB) dated December 3, 2008 (RWQCB, 2008).

This memorandum was prepared to respond to RWQCB and DTSC comments on the Work Plan Addendum. RWQCB and DTSC comments were provided verbally to Boeing and NASA during a teleconference on May 19, 2010. DTSC provided additional comments in an email on May 26, 2010. Comments from the RWQCB and DTSC on the Work Plan Addendum are reproduced below in their entirety, and a response is provided below each comment. An errata package for the Work Plan Addendum is provided as an attachment to this memorandum. The errata package includes five revised pages of text, two revised tables, one revised figure, and a new

appendix that incorporate the responses to RWQCB and DTSC comments and other inaccuracies identified since publication of the Work Plan Addendum, as described below.

1) RESPONSE TO COMMENTS

Comment #1: Work Plan Table 1-1 has incorrect units for the Outfall 008 NPDES permit limit exceedance (mg/L instead of µg/L).

Response: Table 1-1 should have listed µg/L as the units for the Outfall 008 NPDES permit limit exceedance results and the 2009 Benchmark limit. Table 1-1 has been revised and is included in the errata package attached to this memorandum.

Comment #2: Work Plan Addendum text on Page 2-1, 1st paragraph, states "Four of the ISRA PEAs are located in the eastern portion of the Outfall 009 watershed and four are located in the western portion of the Outfall 009 watershed, shown in Figures 1-3 and 1-4." However, Figure 1-4 shows five ISRA PEAs in the western portion of Outfall 009.

Response: This text should have stated that there are five ISRA PEAs located in the western portion of Outfall 009. Page 2-1 has been revised and is included in the errata package attached to this memorandum.

Comment #3: Page 2-11 description of PEA-LOX-1 states that 34 samples were collected from 41 locations and analyzed for metals. Please check the number of locations associated with the 34 samples and correct as necessary.

Response: This text should have stated that 34 samples collected from 32 locations were analyzed for metals. Page 2-11 has been revised and is included in the errata package attached to this memorandum.

Comment #4: Please double check the average depth to bedrock indicated in the report text descriptions for PEA-LOX-1 (0.5 ft, page 2-11), PEA-LOX-2 (2 ft, page 2-12), and PEA-A2LF-2 (1 ft, page 2-12). These depths are either inconsistent with the planned excavation depths described in Table 2-1 or inconsistent with my understanding of site conditions.

Response: The text has been revised to clarify the depth bedrock was encountered during the ISRA investigation at PEA-LOX-1 (varies from 0.25 feet to greater than 5.0 feet), PEA-LOX-2 (varies from 1.5 feet to 6.5 feet), and PEA-A2LF-1 (varies from 0.25 feet to greater than 5.0 feet). Pages 2-11 and 2-12 have been revised and are included in the errata package attached to this memorandum.

Comment #5: Work Plan Figure 2-14 (Refined Preliminary ISRA Evaluation Areas Outfall 009 - LOX-1) represents dioxin data with black triangles, but black triangles are not identified in the legend.

Response: The black triangles on Figure 2-14 should have been yellow. Figure 2-14 has been revised and is included in the errata package attached to this memorandum.

Comment #6: Work Plan text states bedrock was encountered at approximately 1.5 feet bgs within the AP/STP-1 ISRA area (page 2-13, 1st paragraph), please confirm this is true.

Response: The text has been revised to clarify the depth bedrock was encountered during the ISRA investigation at PEA-AP/STP-1 (varies from 0.4 feet to greater than 5.0 feet). Page 2-13 has been revised and is included in the errata package attached to this memorandum.

Comment #7: Page 2-18, First full paragraph, Typo error in description of Area 1 Landfill ISRA area as "A2LF-1". Text should be corrected to indicate A1LF-1.

Response: The text should have stated A1LF-1 instead of A2LF-1. Page 2-18 has been revised and is included in the errata package attached to this memorandum.

Comment #8: Work Plan Tables 2-1 and 2-4 do not include TCE as a non-ISRA COC for the IEL-2 ISRA Area, please confirm this is true.

Response: Tables 2-1 and 2-4 should have included TCE as a non-ISRA COC for IEL-2. In addition, the list of non-ISRA COCs for A1LF-1 on Table 2-4 was incorrect and should have matched the list presented on Table 2-1. Tables 2-1 and 2-4 have been revised and are included in the errata package attached to this memorandum.

Comment #9: Include a summary of each former operational site (RFI Site) which is collocated with or located near a 2010 ISRA Area.

Response: A summary of available information on the RFI Sites associated with ISRA Areas recommended for action in the Work Plan Addendum, including the B-1 Area, the Instrument and Equipment Laboratories (IEL), the Area I Landfill (A1LF), the Component Testing Laboratory I (CTL-I), the former LOX Plant, the Area II Landfill (A2LF), and the Incinerator Ash Pile/Sewage Treatment Plant (AP/STP) Area have been compiled and are included in the errata package attached to this memorandum as a new appendix (Appendix C) to the Work Plan Addendum. In addition, Figure 1-2 has been revised to show the location of CTL-I.

ATTACHMENT

2010 ISRA Work Plan Addendum Errata Package

REFERENCES

MWH, 2009a. Preliminary Interim Source Removal Action (ISRA) Work Plan, Santa Susana Field Laboratory, Ventura County, California. February.

MWH, 2009b. Final Interim Source Removal Action (ISRA) Work Plan, Santa Susana Field Laboratory, Ventura County, California. May.

MWH, 2009c. Addendum to the Final Interim Source Removal Action (ISRA) Work Plan Submitted in Response to California Water Code Section 13304 Order (NPDES NO. CA0001309, CI NO. 6027, SCP NO. 1111, Site ID NO. 2040109); Response to RWQCB and DTSC Comments on the Final ISRA Work Plan, Letter to RWQCB. June 19.

MWH, 2009d. HVS-2A Soil Collapse Feature and Pipeline Removal Summary and Plan, Letter Amendment to the Final Interim Source Removal Action (ISRA) Work Plan, California Water Code Section 13304 Order (NPDES NO. CA0001309, CI NO. 6027, SCP NO. 1111, Site ID NO. 2040109). September 18.

MWH, 2009e. Happy Valley South Underground Septic Tank Removal Plan, California Water Code Section 13304 Order (NPDES No. CA0001309, CI No. 6027, SCP NO. 1111, Site ID NO. 2040109), Letter to RWQCB. October 9.

MWH, 2010. 2010 Interim Source Removal Action (ISRA) Work Plan Addendum, Santa Susana Field Laboratory, Ventura County, California. April.

NASA, 2009. Additional Removals [Areas in the Outfall 009 Watershed], Email to RWQCB. September 18.

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Attachment 1

Work Plan Addendum Errata Package

Text

Page iii, (List of Appendices), list was revised to indicate revised tables, figures and the addition of Appendix C.

Page 2-1, (Section 2.0 Outfall 009 ISRA Area Identification and Remedial Planning) first paragraph, text revised to state the correct number of ISRA PEAs (5) located in the western portion of Outfall 009 as shown on Figure 1-4.

Page 2-11, (Section 2.1.2, Sampling Results) fourth paragraph, text revised to clarify depth bedrock encountered during the ISRA investigation at PEA-LOX-1; fifth paragraph, text revised to state that 34 samples collected from 32 locations were analyzed for metals.

Page 2-12, (Section 2.1.2, Sampling Results) first paragraph, text revised to clarify depth bedrock encountered during the ISRA investigation at PEA-LOX-2; fifth paragraph, text revised to clarify depth bedrock encountered during the ISRA investigation at PEA-A2LF-2.

Page 2-13, (Section 2.1.2, Sampling Results) first paragraph, text revised to clarify depth bedrock encountered during the ISRA investigation at PEA-AP/STP-1.

Page 2-18, (Section 2.3, Remedial Alternative Evaluation and Plan) first full paragraph, text revised to state A1LF-1 instead of A2LF-1.

Tables

Table 1-1 was revised to list µg/L as the units for the Outfall 008 NPDES permit limit exceedance results and the 2009 Benchmark limit.

Table 2-1 was revised to include TCE as a non-ISRA COC for IEL-2.

Table 2-4 was revised to include TCE as a non-ISRA COC for IEL-2.

Figures

Figure 1-2 has been revised to show the location of CTL-I.

Figure 2-14 was revised to replace the black triangles with yellow triangles.

Appendices

Appendix C is a new appendix that provides a summary of available information on the RFI Sites associated with 2010 ISRA Areas.

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ABBREVIATIONS AND ACRONYMS

AL1F	Area 1 Landfill
ASTM	American Society for Test and Materials
bgs	below ground surface
Boeing	The Boeing Company
CAO	Cleanup and Abatement Order
CDFG	California Department of Fish and Game
CM	culvert maintenance
COC	constituents of concern
CWA	Clean Water Act
cy	cubic yards
DTSC	Department of Toxic Substances Control
ELV	Expendable Launch Vehicle
EPA	United States Environmental Protection Agency
Geosyntec	Geosyntec Consultants, Inc.
HSP	health and safety plan
ISRA	Interim Source Removal Action
LOX	liquid oxygen
mg/kg	milligrams per kilogram
NASA	National Aeronautics and Space Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NWP	Nationwide Permit
MRCA	Mountains Recreation Conservancy Authority
PCBs	polychlorinated biphenyls
PEA	preliminary evaluation area
pg/g	picograms per gram
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RUSLE	Revised Universal Soil Loss Equation, Version 2
RWQCB	Los Angeles Regional Water Quality Control Board

2.0 OUTFALL 009 ISRA AREA IDENTIFICATION AND REMEDIAL PLANNING

There are eight ISRA PEAs that were identified in the Preliminary ISRA Work Plan (MWH, 2009a) based on available soil data, but have not been evaluated in previous work plans and work plan addenda. Four of the ISRA PEAs are located in the eastern portion of the Outfall 009 watershed and five are located in the western portion of the Outfall 009 watershed, shown in Figures 1-3 and 1-4. Although these figures display only surface soil data, subsurface soil data were also considered in the identification of ISRA PEAs in the Preliminary ISRA Work Plan; all subsurface soil COC detections above SRGs were collocated with surficial COC impacts.

As described in previous work plans, the ISRA PEAs identified in the Preliminary ISRA Work Plan were highly generalized and approximate due to data limitations. Additional soil samples have been collected at and near these ISRA PEAs to further delineate areas exceeding SRGs for the ISRA COCs, and assess concentrations of ISRA COCs near and/or down-gradient of former operational areas previously not investigated (see Section 2.1). This section summarizes the sampling activities and results, the ISRA area identification results, the remedial alternatives evaluation results, and the recommended remedial action for each ISRA area identified within the remaining ISRA PEAs within the Outfall 009 watershed. Descriptions in the following sections use the term "COC" to include both ISRA COCs and collocated non-ISRA COCs, including RCRA risk drivers.

2.1 SOURCE DELINEATION AND DATA GAP SAMPLING

An evaluation of previous soil sample locations and analytical results was performed to identify locations for source delineation and data gap sampling. Source delineation soil sampling was performed to further refine the extent and magnitude of soil COCs within ISRA PEAs. Data gap sampling was performed near and/or down-gradient of former operational areas where the absence of a COC had not been verified by previous sampling. The sampling approach, plan, methods, and results of the source delineation and data gap sampling performed within the eight remaining ISRA PEAs located within the Outfall 009 watershed are described below.

2.1.1 Sampling Approach and Plan

Source delineation and data gap soil sampling in the vicinity of the eight remaining ISRA PEAs was performed to further refine the extent and magnitude of COCs within the Outfall 009 watershed. Source delineation and step out sampling locations performed between June 2009 and March 2010 are shown on Figures 2-1 to 2-6.

In general, the sampling approach and methods followed those presented in the Final ISRA Work Plan (MWH, 2009b). Source delineation and step out samples were collected approximately 25 to 50 feet from previous sample location(s) with COCs exceeding SRGs and approximately 25 to 50 feet from other source delineation sample locations. The sample spacing considered the surface area of the impact and the likely depositional method, with greater spacing for larger areas and those possibly impacted by air dispersion. Source delineation samples were also collected proximate to existing sample locations for which the vertical extent required assessment. Data gap samples were collected near and/or down-gradient of former operational areas where the absence of a COC had not been verified by previous sampling. Generally within drainages, source delineation and data gap assessment was performed by collecting 3 to 5 samples along transects aligned perpendicular to the surface water flow pathway, with a 5- to 10-foot spacing within each transect. This sampling approach was designed to characterize soil from the middle of the drainage, the banks of the drainage, and the overbanks area.

At each source delineation and data gap sample location, a surface soil sample and a subsurface soil sample were collected, if soil depth allowed. The analytical suite for source delineation samples was chosen based on constituents known from previous sampling to be associated with a potential source area, and included both ISRA COCs and RCRA risk drivers. The analytical suite for data gap samples was chosen based on the analytes for which the data gap existed. Soil samples from step out locations and subsurface soil samples were placed on hold at the laboratory and only analyzed if needed for source delineation. Source delineation and data gap sample analysis included one or more of the following:

- Metals by United States Environmental Protection Agency (EPA) 6010B/6020/7471A;

(cadmium, copper, lead, and mercury) and dioxins are presented in Appendix A. The following is a summary of the results:

- **Metals.** Of the 10 soil samples (19 surface samples and 1 duplicate sample) analyzed for one or more of the metals listed above, 4 samples contained lead above the SRG of 34 mg/kg. Lead was detected up to 79.9 mg/kg at ENBS0133.
- **Dioxins.** Of the 17 soil samples (16 surface samples and 1 duplicate sample) analyzed for dioxins, 3 samples contained dioxins above the SRG of 3.0 pg/g. Dioxins were detected up to 7.2 pg/g at ENBS0121.

PEA-LOX-1

Forty-two borings were advanced during source delineation sampling at PEA-LOX-1. A total of 44 soil samples (41 surface samples, 2 subsurface samples, and 1 split sample) were collected from 42 sampling locations and analyzed for ISRA COCs. The source delineation sampling locations are shown on Figure 2-6. Sampling depths varied from refusal on sandstone at 0.25 feet bgs to 5.0 feet bgs with no refusal.

Thirty four soil samples collected from 32 locations were analyzed for metals and 36 soil samples collected from 34 locations were analyzed for dioxins. Results of chemical testing for metals (cadmium, copper, and lead) and dioxins are presented in Appendix A, and shown on Figure 2-14. The following is a summary of the results:

- **Metals.** Of the 34 soil samples (32 surface samples, 2 subsurface samples) analyzed for one or more of the metals listed above, 8 soil samples contained lead above the SRG of 34 mg/kg and 8 soil samples contained copper above the SRG of 29 mg/kg. Lead was detected up to 203 mg/kg at LXBS1051 and copper was detected up to 121 mg/kg at LXBS1066.
- **Dioxins.** Of the 36 soil samples (34 surface samples, 2 subsurface) analyzed for dioxins, 29 soil samples contained dioxins above the SRG of 3.0 pg/g. Dioxins were detected up to 340 pg/g at LXBS1046.

PEA-LOX-2

Thirty-seven borings were advanced during source delineation sampling at PEA-LOX-2. A total of 12 soil samples (11 surface samples and 1 duplicate sample) were collected from 11 sampling locations and analyzed for ISRA COCs. Twenty-five of the sampling locations (ENBS0081,

ENBS0162 to ENBS0165, ENBS0167 to ENBS0170, ENBS0172 to ENBS0174, ENBS0176 to ENBS0179, ENBS0181 and ENBS0184, ENBS0186 to ENBS0189, and ENBS0194) did not have a sample analyzed either because samples were not collected due to refusal prior to reaching the desired sample depth, or analysis of collected samples was not needed for source delineation. The source delineation sampling locations are shown on Figure 2-4. PEA-LOX-2 consists of four drainages which are labeled CM-2, CM-3, CM-4 and CM-10 after the culvert maintenance activities. The average depth of all four drainages was 1.5 feet bgs, and the maximum depth to bedrock was located in the CM-2 drainage basin up to 6.5 feet bgs.

Two soil samples collected from 2 locations were analyzed for lead and 11 soil samples collected from 10 locations were analyzed for dioxins. Results of chemical testing for lead and dioxins are presented in Appendix A. The following is a summary of the results:

- **Metals.** Of the 2 soil samples (surface samples) analyzed for lead, 1 soil sample contained lead above the SRG of 34 mg/kg. Lead was detected up to 124 mg/kg at ENBS0195.
- **Dioxins.** Of the 11 soil samples (10 surface samples and 1 duplicate sample) analyzed for dioxins, no samples contained dioxins above the SRG.

PEA-A2LF-2

Eleven borings were advanced during source delineation sampling at PEA-A2LF-2. A total of 11 soil samples (10 surface samples, and 1 subsurface samples) were collected from 11 sampling locations and analyzed for ISRA COCs. The source delineation sampling locations are shown on Figure 2-6. Sampling depths varied from refusal on sandstone at 0.25 feet bgs to 5.0 feet bgs with no refusal.

Eleven soil samples collected from 11 locations were analyzed for metals. Results of chemical testing for metals (lead and mercury) are presented in Appendix A, and shown on Figure 2-15. The following is a summary of the results:

- **Metals.** Of the 11 soil samples (10 surface samples, 1 subsurface sample) analyzed for one or more of the metals listed above, 4 soil samples contained mercury above the SRG of 0.09 mg/kg. Mercury was detected up to 0.174 mg/kg in A2BS1081.

PEA-AP/STP-1

Sixty-nine borings were advanced during source delineation sampling at PEA-AP/STP-1. A total of 87 soil samples (66 surface samples, and 21 subsurface samples) were collected from 69 sampling locations and analyzed for ISRA COCs. The source delineation sampling locations are shown on Figure 2-6. Sampling depths varied from refusal on sandstone at 0.4 feet bgs to 5.0 feet bgs with no refusal.

Ten soil samples collected from 8 locations were analyzed for metals and 82 soil samples collected from 66 locations were analyzed for dioxins. Results of chemical testing for metals (cadmium, lead, and mercury) and dioxins are presented in Appendix A, and shown on Figure 2-16. The following is a summary of the results:

- **Metals.** Of the 10 soil samples (8 surface samples and 2 subsurface samples) analyzed for one or more of the metals listed above, 2 samples contained cadmium above the SRG of 1.0 mg/kg, 1 sample contained lead above the SRG of 34 mg/kg, and 3 samples contained mercury above the SRG of 0.09 mg/kg. Cadmium was detected up to 3.42 mg/kg at APBS1029. Lead was detected up to 115 mg/kg at APBS1029, and mercury was detected up to 0.399 mg/kg at APBS1029.
- **Dioxins.** Of the 82 soil samples (66 surface samples and 16 subsurface samples) analyzed for dioxins, 53 soil samples contained dioxins above the SRG of 3.0 pg/g. Dioxins were detected up to 610 pg/g at APBS1042.

The objective of the sampling was to refine the estimated extent and magnitude of soil COC areas within each ISRA PEA, and identify new ISRA PEAs if data gap samples collected outside the identified ISRA PEAs exceeded SRGs. As described in the results summary above, select ISRA PEAs were subdivided into two or more PEAs based on previous sample results prior to performing source delineation sampling. Based on source delineation sample results, ISRA PEAs were subdivided further and boundaries refined. The boundaries of the refined ISRA PEAs that are evaluated in the ISRA area identification process (Section 2.2) are shown on Figures 2-7 through 2-16, and are listed below.

- PEA-A1LF-1 was subdivided into PEA-A1LF-1 and -2;
- PEA-B1-1 was subdivided into PEA-B1-1 and -2;
- PEA-CTLI-1 was subdivided into PEA-CTLI-1, -2;
- PEA-IEL-1 was subdivided into PEA-IEL-1, -2, -3, -4, -5; and -6;

- PEA-AP/STP-1 was subdivided into PEA-AP/STP-1A, -1B, -1C, -1D, -1E, and -1F;
- PEA-A2LF-2; and
- PEA-LOX-1 was subdivided into PEA-LOX-1A, -1B, -1C, -1D.

Of the 23 ISRA PEAs listed above, additional source delineation sampling is ongoing at six, including PEA-B1-2, PEA-CTLI-1, PEA-A1LF-2, PEA-LOX-1, PEA-A2LF-2, and PEA-AP/STP-1. Although the final excavation boundaries of these six PEAs are still pending, an expected boundary for each PEA is shown on the figures. Following completion of the ongoing delineation sampling, appropriate tables and figures in this report will be revised and submitted to the RWQCB for review and approval.

The six ISRA PEAs that are not in the list above include PEA-A1LF-3, PEA-CTLI-3, PEA-CTLI-4, PEA-IEL-7, PEA-IEL-8, and PEA-LOX-2. Four of these ISRA PEAs is located upgradient of a culvert: PEA-A2LF-3 is upgradient of CM-8, PEA-CTLI-3 is upgradient of CM-7, PEA-CTLI-4 is upgradient of CM-11, and PEA-LOX-2 is upgradient of CM-3. The location of CM-3 is shown on Figure 2-5, the locations of CM-7 and CM-11 are shown on Figure 2-4, and the location of CM-8 is shown Figure 2-3. This summer, accumulated sediment upgradient of each of these culverts is planned to be removed as part of the surface water maintenance program. Because of this planned removal action, these ISRA PEAs will not undergo further evaluation in this work plan addendum. Following completion of the culvert maintenance (CM) activities, the effectiveness of the CM will be evaluated by the results of performance monitoring samples, similar to the process for completed ISRA areas. CM-3, CM-8, and CM-11 have been part of the performance monitoring program since the 2009/2010 rainy season. CM-7 will be added to the performance monitoring program in the 2010/2011 rainy season. PEA-IEL-7 was identified to delineate a surface soil sample at ILBS0280 that contained dioxins above the SRG of 3.0 pg/g. The sample was collected as part of the demolition program to characterize base foundation material from Building 1989. The foundation base material was removed during 2009 demolition activities. Since ISRA delineation sample results at PEA-IEL-7 did not detect dioxins above the SRG, this PEA is not recommended for further evaluation. PEA-IEL-8 was identified as a data gap for dioxins. Since ISRA data gap sample results did not detect dioxins above the SRG, this PEA is not recommended for further evaluation.

were assumed to have concentrations of ISRA COCs equal to the greatest concentration detected within that particular PEA. The analysis also assumed background concentrations for sediments within the watershed.

Based on the analysis, all but 5 of the 23 ISRA PEAs are believed to contribute less than 6% of the annual pollutant yield within the watershed for the ISRA COCs (Geosyntec, 2010). The model indicates PEA-A1LF-1 and PEA-B1-1 contribute the most to the annual COC yield of the watershed, including 1.5% for cadmium and 46% for lead from PEA-A1LF-1, and more than 100% for mercury and dioxins from PEA-B1-1. Other PEAs that contribute more than 6% of the annual pollutant yield with the watershed for the ISRA COCs include PEA-AP/STP-1C (14% for dioxins), PEA-AP/STP-1E (32% for dioxins), and PEA-LOX-1B (24% for dioxins). These results are conservative and likely biased high because, as mentioned above, the sediments within each PEA were assumed to have concentrations of ISRA COCs equal to the greatest concentration detected within that particular PEA.

2.2.3 ISRA Area Identification Summary

The contaminant migration criteria evaluation resulted in 18 of the 23 refined ISRA PEAs with a total rank above a value of 20. Based on the contaminant migration ranking and RUSLE model results, these 18 refined ISRA PEAs are the highest priority areas for ISRA implementation. The five refined ISRA PEAs with a total rank below a value of 20 are the lowest priority areas for ISRA implementation and, at this time, remedial action is not recommended. Two of these five refined ISRA PEAs are covered completely with an impermeable layer, including IEL-3 and IEL-6. If the impermeable layer was removed from each of these PEAs, the total rank of IEL-6 would remain below a value of 20, but IEL-3 would increase to above a value of 20. To remove the potential COCs sources that may be affecting the water quality at the Outfall 009 NPDES monitoring point, the 18 refined ISRA PEAs with a total rank above a value of 20 are considered ISRA areas and are carried forward for the remedial alternatives evaluation. In addition, since PEA-IEL-3 would have a total rank above a value of 20 if the impermeable surface were removed, it is also considered an ISRA area and is carried forward for the remedial alternatives evaluation. The remaining four ISRA PEAs that had a total rank below a value of 20, including

PEA-CTLI-2, PEA-IEL-4, PEA-IEL-5, and PEA-IEL-6, are not considered ISRA areas and will not be carried forward for the remedial alternatives evaluation.

2.3 REMEDIAL ALTERNATIVES EVALUATION AND PLAN

In the Final ISRA Work Plan, a remedial action alternatives analysis was performed for the ISRA project to identify potential source removal alternatives that achieve the remedial objectives and requirements of the CAO. The potential alternatives identified by the analysis were excavation with offsite disposal, capping with a clay cap, and construction of diversion and collections structures. Excavation was ranked highest in meeting the CAO objectives and is considered the default approach to source removal unless circumstances at specific ISRA areas render another alternative more feasible or cost-effective. With the exception of the ISRA areas associated with the Area I Landfill (A1LF-1 and A1LF-2), the ISRA areas identified in Section 2.2 for remedial action are similar in physical, chemical, and geochemical characteristics. In addition, there are relatively small volumes of material to be removed from each area, and there are no known site constraints that render excavation less feasible. Therefore, excavation and offsite disposal is the recommended remedial alternative for these ISRA areas. Although excavation and offsite disposal is the recommended remedial alternative for ISRA Area IEL-3, it is currently covered by asphalt and implementation of the remedial action at this location will be postponed until the asphalt is removed. A summary of the ISRA area remedial plans, including COCs and SRGs, is presented in Table 2-4. Remedial action planning and implementation activities are summarized in Section 3.

The remedial alternatives analysis for the Area I Landfill (A1LF-1) and Area I Landfill drainage (A1LF-2) is more complex than the other ISRA areas due to the relatively large volume of material (~40,000 cy), the permitting requirements, and the involvement of multiple regulatory agencies. Therefore, a separate work plan addendum will be prepared that summarizes the remedial alternatives analysis and identifies the recommended remedial action for the Area I Landfill and the Area I Landfill drainage.

Table 1-1
Summary of NPDES Permit Limit Exceedances - Outfalls 008 and 009
(Page 1 of 1)

Analyte	Sample Date	Result	Units	2009 Benchmark Limit	Units	Data Type
Outfall 008, Happy Valley Drainage						
Copper	18-Feb-05	15	g/L	14.0	g/L	Monitoring-only
Lead	20-Oct-04	9.8	g/L	5.2	g/L	Monitoring-only
Lead	27-Oct-04	9	g/L	5.2	g/L	Monitoring-only
Lead	28-Dec-04	6.4	g/L	5.2	g/L	Monitoring-only
Lead	18-Feb-05	13	g/L	5.2	g/L	Monitoring-only
Lead	18-Oct-05	120	g/L	5.2	g/L	Monitoring-only
Lead	1-Jan-06	20	g/L	5.2	g/L	Monitoring-only
Lead	15-Apr-06	18	g/L	5.2	g/L	Compliance
Lead	25-Jan-08	6.3	g/L	5.2	g/L	Benchmark
Dioxins / TCDD TEQ	18-Feb-05	4.46E-08	g/L	2.80E-08	g/L	Monitoring-only
Dioxins / TCDD TEQ	28-Feb-06	3.19E-07	g/L	2.80E-08	g/L	Monitoring-only
Outfall 009, WS-13 Drainage						
Cadmium	17-Oct-05	9.2	g/L	4.0	g/L	Monitoring-only
Copper	17-Oct-05	39	g/L	14	g/L	Monitoring-only
Copper	18-Feb-06	22	g/L	14	g/L	Monitoring-only
Copper	4-Apr-06	26	g/L	14	g/L	Compliance
Lead	28-Dec-04	11	g/L	5.2	g/L	Monitoring-only
Lead	18-Feb-05	10	g/L	5.2	g/L	Monitoring-only
Lead	17-Oct-05	260	g/L	5.2	g/L	Monitoring-only
Lead	18-Feb-06	33	g/L	5.2	g/L	Monitoring-only
Lead	4-Apr-06	64	g/L	5.2	g/L	Compliance
Lead	22-Sep-07	8.6	g/L	5.2	g/L	Compliance
Lead	3-Feb-08	6.0	g/L	5.2	g/L	Benchmark
Lead	15-Dec-08	19	g/L	5.2	g/L	Benchmark
Lead	6-Feb-09	7.5	g/L	5.2	g/L	Benchmark
Lead	13-Feb-09	20	g/L	5.2	g/L	Benchmark
Lead	7-Dec-09	5.7	g/L	5.2	g/L	Benchmark
Mercury	4-Jan-05	0.20	g/L	0.13	g/L	Monitoring-only
Mercury	17-Oct-05	0.21	g/L	0.13	g/L	Monitoring-only
Oil & Grease	11-Jan-05	16	mg/L	15	mg/L	Compliance
pH	17-Oct-05	8.80	pH units	6.5 - 8.5	pH units	Compliance
Dioxins / TCDD TEQ	4-Jan-05	1.72E-06	g/L	2.80E-08	g/L	Monitoring-only
Dioxins / TCDD TEQ	18-Feb-05	5.20E-08	g/L	2.80E-08	g/L	Monitoring-only
Dioxins / TCDD TEQ	17-Oct-05	9.10E-04	g/L	2.80E-08	g/L	Monitoring-only
Dioxins / TCDD TEQ	9-Nov-05	6.14E-07	g/L	2.80E-08	g/L	Monitoring-only
Dioxins / TCDD TEQ	18-Feb-06	1.56E-05	g/L	2.80E-08	g/L	Monitoring-only
Dioxins / TCDD TEQ	4-Apr-06	1.77E-05	g/L	2.80E-08	g/L	Compliance
Dioxins / TCDD TEQ	19-Feb-07	7.64E-07	g/L	2.80E-08	g/L	Compliance
Dioxins / TCDD TEQ	22-Sep-07	3.13E-06	g/L	2.80E-08	g/L	Compliance
Dioxins / TCDD TEQ	3-Feb-08	3.58E-07	g/L	2.80E-08	g/L	Benchmark
Dioxins / TCDD TEQ	26-Nov-08	3.99E-07	g/L	2.80E-08	g/L	Benchmark
Dioxins / TCDD TEQ	15-Dec-08	1.83E-06	g/L	2.80E-08	g/L	Benchmark
Dioxins / TCDD TEQ	6-Feb-09	9.55E-07	g/L	2.80E-08	g/L	Benchmark
Dioxins / TCDD TEQ	13-Feb-09	1.22E-05	g/L	2.80E-08	g/L	Benchmark
Dioxins / TCDD TEQ	14-Oct-09	1.60E-06	g/L	2.80E-08	g/L	Benchmark
Dioxins / TCDD TEQ	7-Dec-09	1.10E-07	g/L	2.80E-08	g/L	Benchmark

Notes:

NPDES Permit exceedances are sample results that are greater than the NPDES limit and were collected after the discharge limit was established and before limit was updated to a benchmark (performance based) limit for the outfalls (compliance data above).

Dioxins / TCDD TEQ - A sum of 17 dioxin / furan congener results adjusted for toxicity. The TEQ is calculated by multiplying the result of each congener by its respective World Health Organization's (1998 WHO's) toxic equivalency factor (TEF), which is based on the relative potency of the congener to cause a toxic response relative to 2,3,7,8-TCDD. TCDD TEQ values do not include laboratory data not quantified (DNQ) as specified in the NPDES permit.

TCDD TEQ - tetrachlorobenzo-p-dioxin toxic equivalent (normalized to 2,3,7,8-TCDD)

Table 2-1
Outfall 009 ISRA PEA Chemical and Physical Characteristics
(Page 1 of 5)

Site Name	ISRA COCs Exceeding Soil Remediation Goals in Soil < 2 ft bgs[a]	Non-ISRA COCs Exceeding Screening Levels in Soil < 2 ft bgs[b,c]	ISRA COCs Exceeding Soil Remediation Goals in Soil 2-10 ft bgs[a]	Non-ISRA COCs Exceeding Screening Levels in Soil 2-10 ft bgs[b,c]	Surface Area, Range of Exceedance Depth, Average Exceedance Depth, and Volume Estimate[d]	Surface Conditions[e]	Other Physical Parameters of ISRA Area[f,g,h]
PEA-A1LF-1	Cadmium: 5.4x SRG (4) Copper: 1.6x SRG (1) Lead: 160x SRG (1) Mercury: 5.8x SRG (4)	Arsenic: 1.0x BG (1) Zinc: 8.0x BG (3) Aroclor 1254: 3.9x Eco RBSL (4)	Cadmium: 66x SRG (11) Copper: 2.9x SRG (4) Lead: 97x SRG (5) Mercury: 8.2x SRG (10)	Arsenic: 2.5x BG (7) Cobalt: 2.1x BG (2) Manganese: 2.1x BG (4) Nickel: 4.6x BG (1) Silver: 270x BG (3) Vanadium: 2.1x BG (2) Zinc: 440x BG (11) Aroclor 1254: 13x Eco RBSL (8) Aroclor 1260: 1.7x Eco RBSL (2)	Surface Area = 11,900 yd² Depth Range = 0 - ~25 ft bgs Depth Average = 9.8 ft bgs Volume = 38,870 cy	Impermeable Cover = 15 % Vegetated Cover = 85 % Type of Vegetation = Bare Soil Surface Relief = Smooth	Soil Texture = Medium-Fine Slope Length = 120 feet Elevation Change = 54 feet % Slope = 45% Distance from Drainage = 0 feet Depth to Groundwater = > 10 feet
PEA-A1LF-2	Cadmium: 2.6x SRG (7) Dioxins: 3.5x SRG (4) Lead: 1.3x SRG (1) Mercury: 6.3x SRG (3)	Silver: 13x BG (11) Zinc: 1.1x BG (1) Total Aroclors: 4.1x Eco RBSL (8)	Cadmium: 2.8x SRG (6) Mercury: 3.7x SRG (1)	Silver: 2.7x BG (1) Zinc: 1.4x BG (3)	Surface Area = 914 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 610 cy	Impermeable Cover = 5 % Vegetated Cover = 95 % Type of Vegetation = Bushes Surface Roughness = Dissected	Soil Texture = Medium-Fine Slope Length = 270 feet Elevation Change = 25 feet % Slope = 9% Distance from Drainage = 0 feet Depth to Groundwater = > 10 feet
PEA-A2LF-2	Mercury: 1.9x SRG (2)	PAHs: 2.3x Res HH RBSL (6)	--	--	Surface Area = 2,711 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 1,810 cy	Impermeable Cover = 0 % Vegetated Cover = 100 % Type of Vegetation = Bushes Surface Roughness = Smooth	Soil Texture = Medium Slope Length = 250 feet Elevation Change = 81 feet % Slope = 32% Distance from Drainage = 191 feet Depth to Groundwater = > 10 feet
PEA-AP/STP-1A	Dioxins: 11x SRG (1)	--	--	--	Surface Area = 106 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 70 cy	Impermeable Cover = 0 % Vegetated Cover = 60 % Type of Vegetation = Bushes Surface Roughness = Smooth	Soil Texture = Medium-Fine Slope Length = 46 feet Elevation Change = 3 feet % Slope = 7% Distance from Drainage = 278 feet Depth to Groundwater = > 10 feet
PEA-AP/STP-1B	Cadmium: 4.9x SRG (4) Copper: 1.8x SRG (1) Lead: 88x SRG (3)	--	--	--	Surface Area = 2,293 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 1,530 cy	Impermeable Cover = 0 % Vegetated Cover = 100 % Type of Vegetation = Bushes Surface Roughness = Smooth	Soil Texture = Medium Slope Length = 115 feet Elevation Change = 14 feet % Slope = 12% Distance from Drainage = 0 feet Depth to Groundwater = > 10 feet

Table 2-1
Outfall 009 ISRA PEA Chemical and Physical Characteristics
(Page 2 of 5)

Site Name	ISRA COCs Exceeding Soil Remediation Goals in Soil < 2 ft bgs[a]	Non-ISRA COCs Exceeding Screening Levels in Soil < 2 ft bgs[b,c]	ISRA COCs Exceeding Soil Remediation Goals in Soil 2-10 ft bgs[a]	Non-ISRA COCs Exceeding Screening Levels in Soil 2-10 ft bgs[b,c]	Surface Area, Range of Exceedance Depth, Average Exceedance Depth, and Volume Estimate[d]	Surface Conditions[e]	Other Physical Parameters of ISRA Area[f,g,h]
PEA-AP/STP-1C	Cadmium: 1.3x SRG (2) Copper: 1.3x SRG (1) Dioxins: 79x SRG (43) Lead: 2.8x SRG (3) Mercury: 1.1x SRG (1)	--	--	--	Surface Area = 8,111 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 5,410 cy	Impermeable Cover = 6 % Vegetated Cover = 94 % Type of Vegetation = Bushes Surface Roughness = Smooth	Soil Texture = Medium Slope Length = 345 feet Elevation Change = 17 feet % Slope = 5% Distance from Drainage = 0 feet Depth to Groundwater = > 10 feet
PEA-AP/STP-1D	Dioxins: 17x SRG (2)	--	--	--	Surface Area = 483 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 320 cy	Impermeable Cover = 0 % Vegetated Cover = 100 % Type of Vegetation = Bushes Surface Roughness = Smooth	Soil Texture = Medium Slope Length = 80 feet Elevation Change = 6 feet % Slope = 8% Distance from Drainage = 116 feet Depth to Groundwater = > 10 feet
PEA-AP/STP-1E	Dioxins: 700x SRG (7)	--	--	--	Surface Area = 2,369 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 1,580 cy	Impermeable Cover = 4 % Vegetated Cover = 96 % Type of Vegetation = Bushes Surface Roughness = Smooth	Soil Texture = Medium Slope Length = 196 feet Elevation Change = 10 feet % Slope = 5% Distance from Drainage = 0 feet Depth to Groundwater = > 10 feet
PEA-AP/STP-1F	Dioxins: 4.5x SRG (2)	--	--	--	Surface Area = 1,160 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 770 cy	Impermeable Cover = 0 % Vegetated Cover = 100 % Type of Vegetation = Bushes Surface Roughness = Smooth	Soil Texture = Medium Slope Length = 90 feet Elevation Change = 28 feet % Slope = 31% Distance from Drainage = 56 feet Depth to Groundwater = > 10 feet
PEA-B1-1	Cadmium: 3.7x SRG (2) Dioxins: 270x SRG (12) Mercury: 830x SRG (8)	--	Dioxins: 7.9x SRG (1)	--	Surface Area = 3,323 yd² Depth Range = 0 - 5 ft bgs Depth Average = 3 ft bgs Volume = 3,320 cy	Impermeable Cover = 5 % Vegetated Cover = 95 % Type of Vegetation = Bushes Surface Roughness = Hummocky	Soil Texture = Medium-Fine Slope Length = 540 feet Elevation Change = 94 feet % Slope = 17% Distance from Drainage = 230 feet Depth to Groundwater = > 10 feet
PEA-B1-2	Cadmium: 7.7x SRG (7) Copper: 2.4x SRG (7) Dioxins: 34x SRG (5) Lead: 14x SRG (9)	Selenium: 1.1x BG (1)	Cadmium: 1.1x SRG (1) Lead: 1.2x SRG (1)	--	Surface Area = 911 yd² Depth Range = 0 - 5 ft bgs Depth Average = 5 ft bgs Volume = 1,520 cy	Impermeable Cover = 10 % Vegetated Cover = 90 % Type of Vegetation = Bushes Surface Roughness = Hummocky	Soil Texture = Medium-Fine Slope Length = 112 feet Elevation Change = 4 feet % Slope = 4% Distance from Drainage = 0 feet Depth to Groundwater = 5 feet

Table 2-1
Outfall 009 ISRA PEA Chemical and Physical Characteristics
(Page 3 of 5)

Site Name	ISRA COCs Exceeding Soil Remediation Goals in Soil < 2 ft bgs[a]	Non-ISRA COCs Exceeding Screening Levels in Soil < 2 ft bgs[b,c]	ISRA COCs Exceeding Soil Remediation Goals in Soil 2-10 ft bgs[a]	Non-ISRA COCs Exceeding Screening Levels in Soil 2-10 ft bgs[b,c]	Surface Area, Range of Exceedance Depth, Average Exceedance Depth, and Volume Estimate[d]	Surface Conditions[e]	Other Physical Parameters of ISRA Area[f,g,h]
PEA-CTLI-1	Copper: 66x SRG (3) Dioxins: 31x SRG (3) Lead: 13x SRG (12)	Benzo(a)pyrene: 810x Res HH RBSL (15) Zinc: 6.9x BG (17)	--	--	Surface Area = 1,248 yd² Depth Range = 0 - 5 ft bgs Depth Average = 3 ft bgs Volume = 1,250 cy	Impermeable Cover = 10 % Vegetated Cover = 90 % Type of Vegetation = Bushes Surface Roughness = Dissected	Soil Texture = Medium Slope Length = 180 feet Elevation Change = 50 feet % Slope = 28% Distance from Drainage = 0 feet Depth to Groundwater = > 10 feet
PEA-CTLI-2	Lead: 1.5x SRG (3)	--	--	--	Surface Area = 160 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 110 cy	Impermeable Cover = 10 % Vegetated Cover = 90 % Type of Vegetation = Bushes Surface Roughness = Hummocky	Soil Texture = Medium-Fine Slope Length = 46 feet Elevation Change = 14 feet % Slope = 30% Distance from Drainage = 51 feet Depth to Groundwater = > 10 feet
PEA-IEL-1	Mercury: 17x SRG (1)	--	--	--	Surface Area = 91 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 60 cy	Impermeable Cover = 0 % Vegetated Cover = 100 % Type of Vegetation = Grasses Surface Roughness = Smooth	Soil Texture = Medium-Fine Slope Length = 43 feet Elevation Change = 2 feet % Slope = 5% Distance from Drainage = 103 feet Depth to Groundwater = > 10 feet
PEA-IEL-2	Cadmium: 2.8x SRG (3) Lead: 4.1x SRG (3) Mercury: 50x SRG (5)	TCE: 590x Res HH RBSL (2)	Mercury: 3.7x SRG (2)	TCE: 27x Res HH RBSL (1)	Surface Area = 524 yd² Depth Range = 0 - 5.5 ft bgs Depth Average = 5 ft bgs Volume = 870 cy	Impermeable Cover = 0 % Vegetated Cover = 100 % Type of Vegetation = Bare Soil Surface Roughness = Berms	Soil Texture = Medium-Fine Slope Length = 63 feet Elevation Change = 5 feet % Slope = 8% Distance from Drainage = 360 feet Depth to Groundwater = > 10 feet
PEA-IEL-3	Cadmium: 4.8x SRG (1) Copper: 10x SRG (1) Lead: 9.4x SRG (1) Mercury: 1.3x SRG (2)	Benzo(a)pyrene: 1.1x Res HH RBSL (1)	Mercury: 2.1x SRG (1)	--	Surface Area = 258 yd² Depth Range = 0 - 5 ft bgs Depth Average = 3 ft bgs Volume = 260 cy	Impermeable Cover = 100 % Vegetated Cover = 0 % Type of Vegetation = N/A Surface Roughness = Smooth	Soil Texture = Medium-Fine Slope Length = 49 feet Elevation Change = 1 feet % Slope = 2% Distance from Drainage = 51 feet Depth to Groundwater = > 10 feet
PEA-IEL-4	Copper: 1.2x SRG (1)	--	--	--	Surface Area = 119 yd² Depth Range = 0 - 1 ft bgs Depth Average = 1 ft bgs Volume = 40 cy	Impermeable Cover = 0 % Vegetated Cover = 100 % Type of Vegetation = Bare Soil Surface Roughness = Berms	Soil Texture = Medium-Fine Slope Length = 36 feet Elevation Change = 3 feet % Slope = 8% Distance from Drainage = 548 feet Depth to Groundwater = > 10 feet

Table 2-1
Outfall 009 ISRA PEA Chemical and Physical Characteristics
(Page 4 of 5)

Site Name	ISRA COCs Exceeding Soil Remediation Goals in Soil < 2 ft bgs[a]	Non-ISRA COCs Exceeding Screening Levels in Soil < 2 ft bgs[b,c]	ISRA COCs Exceeding Soil Remediation Goals in Soil 2-10 ft bgs[a]	Non-ISRA COCs Exceeding Screening Levels in Soil 2-10 ft bgs[b,c]	Surface Area, Range of Exceedance Depth, Average Exceedance Depth, and Volume Estimate[d]	Surface Conditions[e]	Other Physical Parameters of ISRA Area[f,g,h]
PEA-IEL-5	Lead: 1.2x SRG (1)	--	--	--	Surface Area = 44 yd² Depth Range = 0 - 1 ft bgs Depth Average = 1 ft bgs Volume = 10 cy	Impermeable Cover = 0 % Vegetated Cover = 100 % Type of Vegetation = Bare Soil Surface Roughness = Berms	Soil Texture = Medium-Fine Slope Length = 20 feet Elevation Change = 0 feet % Slope = 0% Distance from Drainage = 637 feet Depth to Groundwater = > 10 feet
PEA-IEL-6	Mercury: 1.1x SRG (1)	--	--	--	Surface Area = 25 yd² Depth Range = 0 - 1.5 ft bgs Depth Average = 1.5 ft bgs Volume = 10 cy	Impermeable Cover = 100 % Vegetated Cover = 0 % Type of Vegetation = N/A Surface Roughness = Smooth	Soil Texture = Medium-Fine Slope Length = 15 feet Elevation Change = 0 feet % Slope = 0% Distance from Drainage = 30 feet Depth to Groundwater = > 10 feet
PEA-LOX-1-A	Copper: 4.8x SRG (1)	--	--	--	Surface Area = 256 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 170 cy	Impermeable Cover = 0 % Vegetated Cover = 100 % Type of Vegetation = Bushes Surface Roughness = Smooth	Soil Texture = Medium Slope Length = 62 feet Elevation Change = 22 feet % Slope = 35% Distance from Drainage = 10 feet Depth to Groundwater = > 10 feet
PEA-LOX-1-B	Copper: 2.9x SRG (7) Dioxins: 390x SRG (32) Lead: 2.1x SRG (4)	TCE: 19x Res HH RBSL (2)	Dioxins: 6.0x SRG (8)	TCE: 64,000x Res HH RBSL (5)	Surface Area = 10,583 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 7,060 cy	Impermeable Cover = 0 % Vegetated Cover = 100 % Type of Vegetation = Bushes Surface Roughness = Smooth	Soil Texture = Medium Slope Length = 631 feet Elevation Change = 6 feet % Slope = 1% Distance from Drainage = 133 feet Depth to Groundwater = > 10 feet
PEA-LOX-1-C	Copper: 120x SRG (9)	--	--	--	Surface Area = 638 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 430 cy	Impermeable Cover = 10 % Vegetated Cover = 90 % Type of Vegetation = Bushes Surface Roughness = Smooth	Soil Texture = Medium Slope Length = 88 feet Elevation Change = 5 feet % Slope = 6% Distance from Drainage = 93 feet Depth to Groundwater = > 10 feet
PEA-LOX-1-D	Copper: 1.2x SRG (2)	--	--	TCE: 43x Res HH RBSL (2)	Surface Area = 823 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs Volume = 550 cy	Impermeable Cover = 0 % Vegetated Cover = 60 % Type of Vegetation = Bushes Surface Roughness = Smooth	Soil Texture = Medium-Fine Slope Length = 95 feet Elevation Change = 4 feet % Slope = 4% Distance from Drainage = 118 feet Depth to Groundwater = > 10 feet

Table 2-1
Outfall 009 ISRA PEA Chemical and Physical Characteristics
(Page 5 of 5)

Site Name	ISRA COCs Exceeding Soil Remediation Goals in Soil < 2 ft bgs[a]	Non-ISRA COCs Exceeding Screening Levels in Soil < 2 ft bgs[b,c]	ISRA COCs Exceeding Soil Remediation Goals in Soil 2-10 ft bgs[a]	Non-ISRA COCs Exceeding Screening Levels in Soil 2-10 ft bgs[b,c]	Surface Area, Range of Exceedance Depth, Average Exceedance Depth, and Volume Estimate[d]	Surface Conditions[e]	Other Physical Parameters of ISRA Area[f,g,h]

General Notes:

1.6x SRG (3) - Within the ISRA PEA, the maximum detection of a specific analyte is approximately 1.6 times the stated screening level, in this case the SRG, and a total of 3 samples exceeded the SRG.

a - SRGs are established only for ISRA COCs and are based on 2005 background comparison concentrations (MWH, 2005). SRGs are consistent with or near 2005 background comparison concentrations for metals and within approximately 3 times 2005 background comparison concentratic COCs were given in the Final ISRA Work Plan (MWH, 2009): Dioxins (TCDD TEQ) = 3.0 pg/g Cadmium = 1 mg/kg Copper = 29 mg/kg Lead = 34 mg/kg Mercury = 0.09 mg/kg

b - Non-ISRA COCs are analytes that exceeded screening levels, including BG for non-ISRA metals, and the lower of the Eco or Res RBSL for other constituents.

c - The following non-ISRA COCs are RCRA risk drivers or contributors at the ISRA PEA indicated based on the Group 1A RFI Report (MWH, 2009a) and Group 2 RFI Report (CH2M HILL, 2008): A1LF-1: metals, Aroclor 1254, and Aroclor 1260 A1LF-2: sliver, zinc, and total aroclors A2LF-2: PAHs (multiple PAHs, however, benzo(a)pyrene in particular) B1-2: selenium CTLI-1: benzo(a)pyrene and zinc IEL-3: benzo(a)pyrene LOX-1-B and LOX-1-D: VOCs (muliple VOCs, however, TCE in particular)

d - Surface area represents the area of the refined ISRA PEA shown on Figures 2-7 through 2-16. Depth range represents maximum range between which material containing ISRA COCs exceeding SRGs, material containing non-ISRA COCs exceeding screening levels, and/or debris exist within the ISRA PEA. Depth average represents the average maximum depth of material containing ISRA COCs exceeding SRGs, material containing non-ISRA COCs exceeding screening levels, and/or debris exist within the ISRA PEA. Volume estimate is calculated using the surface area and depth average.

e - Surface relief represents relief as it contributes to potential for erosion: berms (cross-slope relief obstructs surface water flow; ponding); smooth relief (surface water flows as low-velocity sheet flow); hummocky relief (pits and mounds, potential for rill formation during high rainfall); dissected (rills or gullies indicate active erosion).

f - Soil texture represents the typical soil texture within the ISRA PEA, described as coarse (gravels; poorly-graded coarse sands), medium (poorly-graded and well-graded fine and medium sands), medium-fine (fine-grained silty sands), or fine (silts; clays).

g - Slope length, elevation change, and percent slope refer to the steepest slope segment along the path of surface water flow to evaluate the maximum erosion potential within each ISRA PEA.

h - Distance from drainage represents the distance from the boundary of the ISRA PEA to the nearest focused surface water flow pathway, or to the nearest storm drain that discharges into the Northern Drainage (IEL PEAs).

Acronyms:

BG - Background comparison concentration
COC - constituent of concern
cy - cubic yards
DTSC - Department of Toxic Substances Control
Eco RBSL - Ecological Risk-based Screening Level
ft bgs - feet below ground surface
PAHs - polycyclic aromatic hydrocarbons
PEA - preliminary evaluation area
RCRA - Resource Conservation and Recovery Act
Res HH RBSL - Residential Human Health Risk-Based Screening Level
RFI - RCRA Facility Investigation
SRG - soil remediation goal
TCDD TEQ - tetrachlorobenzo-p-dioxin toxic equivalent (normalized to 2,3,7,8-TCDD)
TCE - trichloroethene
VOC - volatile organic compound
yd^2 - square yards

References:

CH2M Hill, 2008. Draft RCRA Facility Investigation, Santa Susana Field Laboratory, Ventura County, California. November.
MWH, 2005. Standardized Risk Assessment Methodology (SRAM) Work Plan, Revision 2. SSFL, Ventura County. September.
MWH, 2009a. Group 1A - Northeastern Portion of Area I, RCRA Facility Investigation Report, Santa Susana Field Laboratory, Ventura County, California. February.
MWH, 2009b. Final Interim Source Removal Action (ISRA) Work Plan, Santa Susana Field Laboratory, Ventura County, California. May.

Table 2-4
Outfall 009 ISRA Area Remedial Action Summary
(Page 1 of 4)

Site Name	ISRA COCs Exceeding Soil Remediation Goals[a]	Non-ISRA COCs Exceeding Screening Levels[b,c]	Surface Area, Range of Exceedance Depth, Average Exceedance Depth, and *Ex Situ* Volume Estimate[d]	Remedial Action	Soil Remediation Goals
A1LF-1	Cadmium Copper Lead Mercury	Arsenic Cobalt Manganese Nickel Silver Vanadium Zinc Aroclor 1254 Aroclor 1260	Surface Area = 11,900 yd² Depth Range = 0 - ~25 ft bgs Depth Average = 9.8 ft bgs (3.3 yards) Volume = 50,530 cy	In development	Cadmium = 1 mg/kg Copper = 29 mg/kg Lead = 34 mg/kg Mercury = 0.09 mg/kg
A1LF-2	Cadmium Dioxins Lead Mercury	Silver Zinc Total Aroclors	Surface Area = 914 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 790 cy	In development	Cadmium = 1 mg/kg Dioxins = 3 pg/g Lead = 34 mg/kg Mercury = 0.09 mg/kg
A2LF-2	Mercury	PAHs	Surface Area = 2,711 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 2,350 cy	Excavation	Mercury = 0.09 mg/kg
AP/STP-1A	Dioxins	--	Surface Area = 106 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 90 cy	Excavation	Dioxins = 3 pg/g
AP/STP-1B	Cadmium Copper Lead	--	Surface Area = 2,293 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 1,990 cy	Excavation	Cadmium = 1 mg/kg Copper = 29 mg/kg Lead = 34 mg/kg
AP/STP-1C	Cadmium Copper Dioxins Lead Mercury	--	Surface Area = 8,111 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 7,030 cy	Excavation	Cadmium = 1 mg/kg Copper = 29 mg/kg Dioxins = 3 pg/g Lead = 34 mg/kg Mercury = 0.09 mg/kg
AP/STP-1D	Dioxins	--	Surface Area = 483 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 420 cy	Excavation	Dioxins = 3 pg/g

Table 2-4
Outfall 009 ISRA Area Remedial Action Summary
(Page 2 of 4)

Site Name	ISRA COCs Exceeding Soil Remediation Goals[a]	Non-ISRA COCs Exceeding Screening Levels[b,c]	Surface Area, Range of Exceedance Depth, Average Exceedance Depth, and *Ex Situ* Volume Estimate[d]	Remedial Action	Soil Remediation Goals
AP/STP-1E	Dioxins	--	Surface Area = 2,369 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 2,050 cy	Excavation	Dioxins = 3 pg/g
AP/STP-1F	Dioxins	--	Surface Area = 1,160 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 1,000 cy	Excavation	Dioxins = 3 pg/g
B1-1	Cadmium Dioxins Mercury	--	Surface Area = 3,323 yd² Depth Range = 0 - 5 ft bgs Depth Average = 3 ft bgs (1.0 yards) Volume = 4,320 cy	Excavation	Cadmium = 1 mg/kg Dioxins = 3 pg/g Mercury = 0.09 mg/kg
B1-2	Cadmium Copper Dioxins Lead	Selenium	Surface Area = 911 yd² Depth Range = 0 - 5 ft bgs Depth Average = 5 ft bgs (1.7 yards) Volume = 1,980 cy	Excavation	Cadmium = 1 mg/kg Copper = 29 mg/kg Dioxins = 3 pg/g Lead = 34 mg/kg
CTLI-1	Copper Dioxins Lead	Benzo(a)pyrene Zinc	Surface Area = 1,248 yd² Depth Range = 0 - 5 ft bgs Depth Average = 3 ft bgs (1.0 yards) Volume = 1,630 cy	Excavation	Copper = 29 mg/kg Dioxins = 3 pg/g Lead = 34 mg/kg
CTLI-2	Lead	--	Surface Area = 160 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 140 cy	No Action	Lead = 34 mg/kg
IEL-1	Mercury	--	Surface Area = 91 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 80 cy	Excavation	Mercury = 0.09 mg/kg
IEL-2	Cadmium Lead Mercury	TCE	Surface Area = 524 yd² Depth Range = 0 - 5.5 ft bgs Depth Average = 5 ft bgs (1.7 yards) Volume = 1,130 cy	Excavation	Cadmium = 1 mg/kg Lead = 34 mg/kg Mercury = 0.09 mg/kg

Table 2-4
Outfall 009 ISRA Area Remedial Action Summary
(Page 3 of 4)

Site Name	ISRA COCs Exceeding Soil Remediation Goals[a]	Non-ISRA COCs Exceeding Screening Levels[b,c]	Surface Area, Range of Exceedance Depth, Average Exceedance Depth, and *Ex Situ* Volume Estimate[d]	Remedial Action	Soil Remediation Goals
IEL-3	Cadmium Copper Lead Mercury	Benzo(a)pyrene	Surface Area = 258 yd² Depth Range = 0 - 5 ft bgs Depth Average = 3 ft bgs (1.0 yards) Volume = 340 cy	Excavation (Post-Demolition)	Cadmium = 1 mg/kg Copper = 29 mg/kg Lead = 34 mg/kg Mercury = 0.09 mg/kg
IEL-4	Copper	--	Surface Area = 119 yd² Depth Range = 0 - 1 ft bgs Depth Average = 1 ft bgs (0.3 yards) Volume = 50 cy	No Action	Copper = 29 mg/kg
IEL-5	Lead	--	Surface Area = 44 yd² Depth Range = 0 - 1 ft bgs Depth Average = 1 ft bgs (0.3 yards) Volume = 10 cy	No Action	Lead = 34 mg/kg
IEL-6	Mercury	--	Surface Area = 25 yd² Depth Range = 0 - 1.5 ft bgs Depth Average = 1.5 ft bgs (0.5 yards) Volume = 10 cy	No Action	Mercury = 0.09 mg/kg
LOX-1-A	Copper	--	Surface Area = 256 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 220 cy	Excavation	Copper = 29 mg/kg
LOX-1-B	Copper Dioxins Lead	TCE	Surface Area = 10,583 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 9,180 cy	Excavation	Copper = 29 mg/kg Dioxins = 3 pg/g Lead = 34 mg/kg
LOX-1-C	Copper	--	Surface Area = 638 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 560 cy	Excavation	Copper = 29 mg/kg
LOX-1-D	Copper	TCE --	Surface Area = 823 yd² Depth Range = 0 - 2 ft bgs Depth Average = 2 ft bgs (0.7 yards) Volume = 720 cy	Excavation	Copper = 29 mg/kg

Table 2-4
Outfall 009 ISRA Area Remedial Action Summary
(Page 4 of 4)

Site Name	ISRA COCs Exceeding Soil Remediation Goals[a]	Non-ISRA COCs Exceeding Screening Levels[b,c]	Surface Area, Range of Exceedance Depth, Average Exceedance Depth, and *Ex Situ* Volume Estimate[d]	Remedial Action	Soil Remediation Goals

General Notes:

a - SRGs are established only for ISRA COCs and are based on 2005 background comparison concentrations (MWH, 2005). SRGs are consistent with or near 2005 background comparison concentrations for metals and within approximately 3 times 2005 background comparison concentrations for dioxins. The 2005 soil background data are being re-evaluated by DTSC and, as necessary, the SRGs may be revised. SRGs for ISRA COCs were given in the Final ISRA Work Plan (MWH, 2009): Dioxins (TCDD TEQ) = 3.0 pg/g Cadmium = 1 mg/kg Copper = 29 mg/kg Lead = 34 mg/kg Mercury = 0.09 mg/kg

b - Non-ISRA COCs are shown for the depth range 0-10 ft bgs. Non-ISRA COCs are analytes that exceeded screening levels, including BG for non-ISRA metals, and the lower of the Eco or Res RBSL for other constituents.

c - The following non-ISRA COCs are RCRA risk drivers or contributors at the ISRA PEA indicated based on the Group 1A RFI Report (MWH, 2009) and Group 2 RFI Report (CH2M HILL, 2008): A1LF-1: metals, Aroclor 1254, and Aroclor 1260 A1LF-2: sliver, zinc, and total aroclors A2LF-2: PAHs (multiple PAHs, however, benzo(a)pyrene in particular) B1-2: selenium CTL1-1: benzo(a)pyrene and zinc IEL-3: benzo(a)pyrene LOX-1-B and LOX-1-D: VOCs (muliple VOCs, however, TCE in particular)

d - Surface area represents the area of the refined ISRA PEA shown on Figures 2-7 through 2-16. Depth range represents maximum range between which material containing ISRA COCs exceeding SRGs, material containing non-ISRA COCs exceeding screening levels, and/or debris exist within the ISRA PEA. Depth average represents the average maximum depth of material containing ISRA COCs exceeding SRGs, material containing non-ISRA COCs exceeding screening levels, and/or debris exist within the ISRA PEA. Volume estimate is calculated using the surface area and depth average.

Acronyms:

BG - Background comparison concentration
COC - constituent of concern
cy - cubic yards
DTSC - Department of Toxic Substances Control
Eco RBSL - Ecological Risk-based Screening Level
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
PAHs - polycyclic aromatic hydrocarbons
PEA - preliminary evaluation area
pg/g - picograms per gram
RCRA - Resource Conservation and Recovery Act
Res HH RBSL - Residential Human Health Risk-Based Screening Level
RFI - RCRA Facility Investigation
SRG - soil remediation goal
TCDD TEQ - tetrachlorobenzo-p-dioxin toxic equivalent (normalized to 2,3,7,8-TCDD)
TCE - trichloroethene
VOC - volatile organic compound
yd^2 - square yards

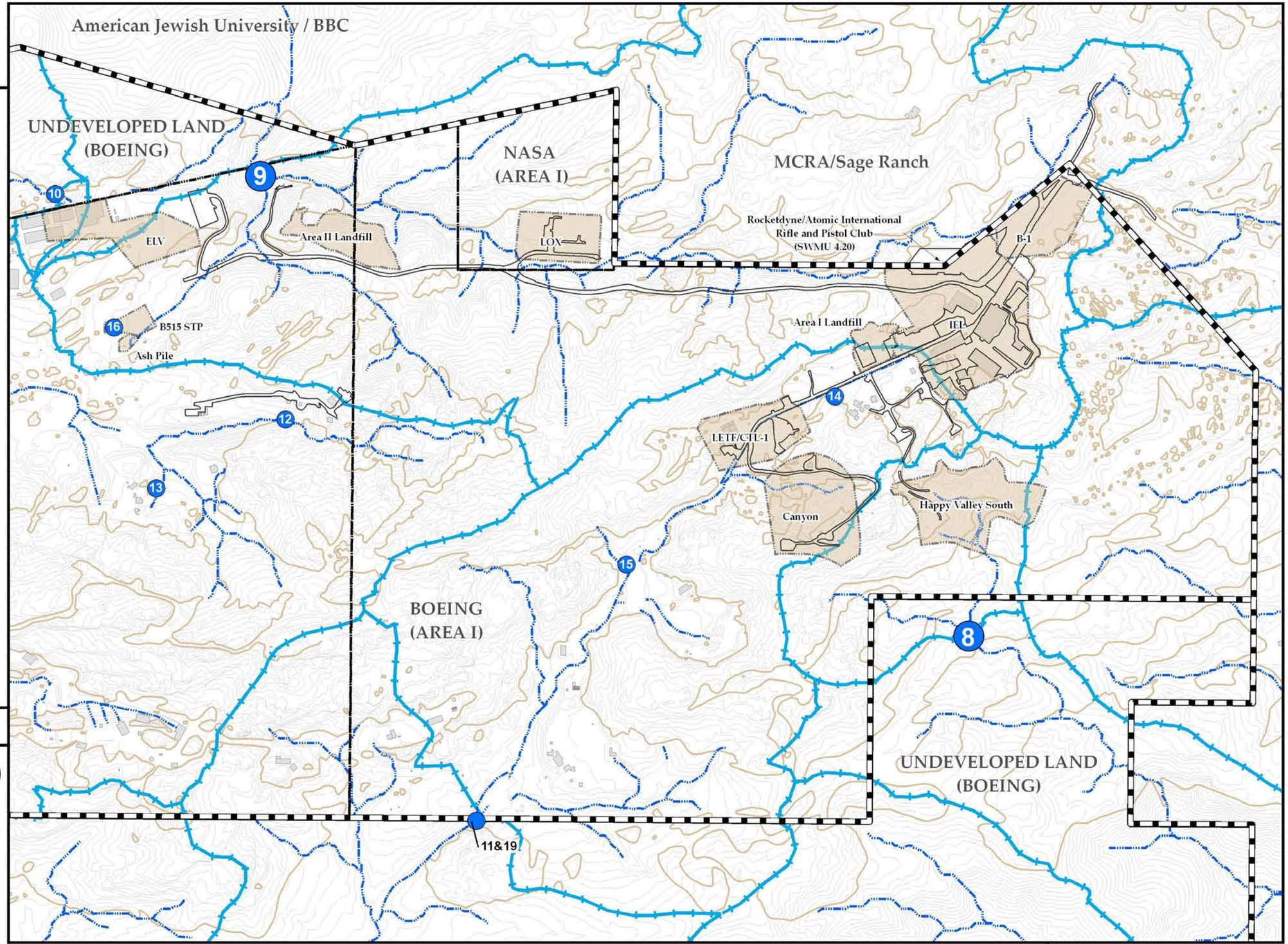
References:

CH2M Hill, 2008. Draft RCRA Facility Investigation, Santa Susana Field Laboratory, Ventura County, California. November.
MWH, 2005. Standardized Risk Assessment Methodology (SRAM) Work Plan, Revision 2. SSFL, Ventura County. September.
MWH, 2009a. Group 1A - Northeastern Portion of Area I, RCRA Facility Investigation Report, Santa Susana Field Laboratory, Ventura County, California. February.
MWH, 2009b. Final Interim Source Removal Action (ISRA) Work Plan, Santa Susana Field Laboratory, Ventura County, California. May.

Outfalls 008 and 009 Location Map

Base Map Legend

- Administrative Area Boundary
- Historical Operations Areas (RFI Sites) Within Outfalls 008 and 009
- Surface Water Drainage
- Surface Water Divide
- NPDES Outfall
- Existing Building or Structure
- Rocks
- Paved Roads
- Elevation Contour



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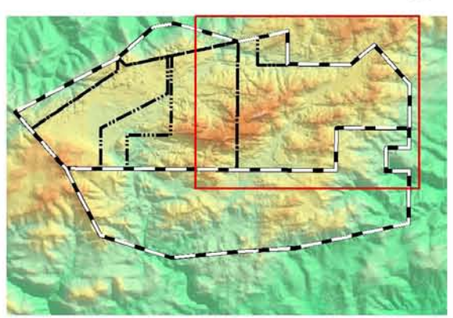

SANTA SUSANA FIELD LABORATORY

MWH

FIGURE 1-2
(Revised)

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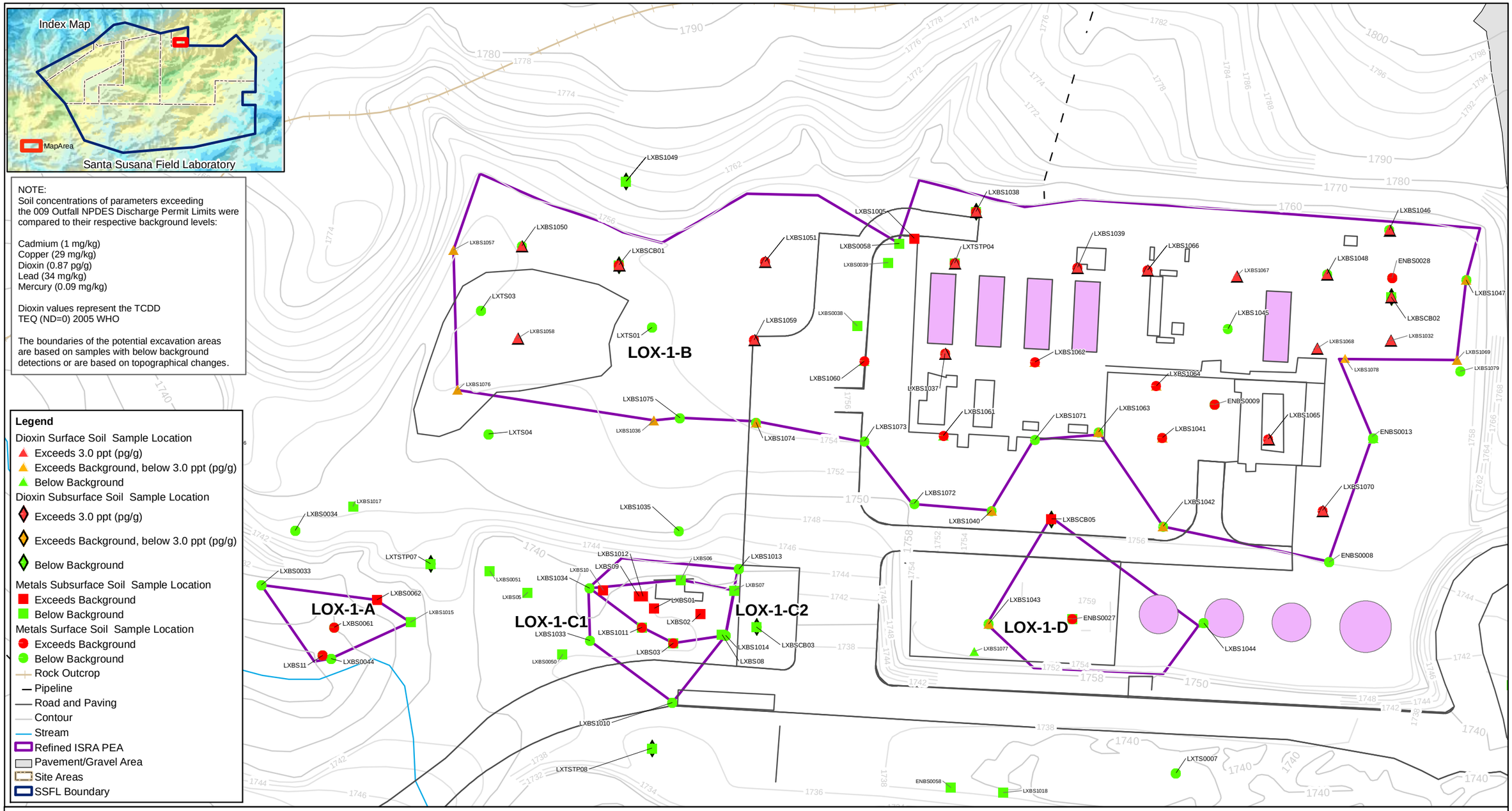

Map Document: (O:\NASA\SSFL\maps\ISRA\LOX1_Refined_ISRA_PEA.mxd)

APPENDIX C

OVERVIEW OF HISTORICAL OPERATIONS WITHIN OUTFALL 009 (NEW ADDITION)

APPENDIX C

OVERVIEW OF HISTORICAL OPERATIONS IN THE VICNITY OF ISRA AREAS RECOMMENDED FOR ACTION

The 19 Interim Source Removal Action (ISRA) Areas recommended for remediation in the 2010 ISRA Work Plan Addendum are located within or in the vicinity of one of the following seven historical operational areas, including the B-1 Area, the Instrument and Equipment Laboratories (IEL), the Area I Landfill (A1LF), the Component Test Laboratory I (CTL-I), the former Liquid Oxygen (LOX) Plant, the Area II Landfill (A2LF), and the Incinerator Ash Pile/Sewage Treatment Plant (AP/STP) Area (Figure 1-2). These seven areas are being investigated as part of the Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI). A brief historical operational summary of these seven RFI sites is provided below. A more comprehensive description of these features is provided in the Group 1A and Group 2 RFI Reports (MWH, 2009; NASA, 2008).

B-1. The B-1 Area is an approximate 7.7-acre area that used to test jet engines using jet propellant (JP)-4, at three test stands, and using "exotic" fuels at a fourth test stand between the early 1950s and the mid 1970s. JP-4 is a mixture of gasoline and diesel fuels, and "exotic" materials were not defined, but may have included hydrazine or pentaborane fuels. Engines were flushed with solvents following testing. Support facilities, such as fuel and waste storage tanks, machine shops/workshops and explosive and equipment storage, were also present at the site. Following use as an engine test facility, the B-1 Area was used for equipment and document storage until the site was dismantled in early 2000. Other operational facilities included a warehouse, pump houses/stations, cooling towers, transformers, and drum storage.

IEL. The IEL RFI Site is an approximate 25-acre area primarily used for the service, repair, assembly, cleaning, and testing of engine valves, manifolds, and instruments. Chemicals used included solvents, acids, lubricant and hydraulic oils, and petroleum-based cleaners. Support facilities, such as a trichloroethane (TCA) distillation area, solvent supply and waste tanks / pipelines, an acid wash bay, test cells and structures, machine shops, and a hydraulic pump

house, were also present at the site. Other operations and supporting facilities included a chemistry laboratory, photographic laboratories, paint shop and storage, fuel tanks, tower / test structure for a sodium mockup facility experiment and igniter development, a propellant laboratory and possible industrial dry well, LOX/fuel safety demonstration area, and equipment storage areas.

A1LF. The A1LF is an approximate 2.4-acre area that was used for disposal of materials generated during construction activities in Area I, including excess fill soils, bedrock, and construction debris, such as asphalt, concrete, timber, and scrap metal. Primary landfill use occurred in the 1950s through 1970. The area on top of the landfill has also been used as a fuel truck staging area and for equipment storage, and included various storage buildings (now removed). Also, a leach field was identified in the eastern portion of the landfill.

CTL-I. The CTL-I Area is included in the LETF/CTL-I RFI Site due to the proximity and related historical operations and together the Laser Engineering Test Facility (LETF)/CTL-I RFI Site consists of approximately 8.1 acres located in the central portion of Area I. The CTL-I was constructed to perform turbo pump, bearing, and seal testing for testing rocket engine components. Building 1309 within CTL-I was used as a component testing laboratory for rocket engines in the 1950s and 1960s, laser diagnostic studies from the 1970s through 1995, and has been utilized as a machine shop since 1996 (Boeing, 2005). The Building 1309 Leach Field, located east of Building 1309, was used for sanitary waste disposal (SAIC, 1994). The northern septic leach field served the northern portion of Building 1309 prior to the workshop building addition in 1956. Three 50,000 gallon water tanks were sited on a 150 foot hillside north of the CTL-I area that supplied water to CTL-I.

LOX. The LOX Plant was located on 42 acres in the northern part of Area I, with the plant buildings occupying approximately 6 acres. LOX was produced using a cryogenic process in which air is liquefied and the oxygen is separated from the nitrogen. The LOX Plant buildings and tanks were removed in the early 1970s. A former waste oil sump and clarifier were located north of the driveway leading to the LOX Plant. A suspected leach pit was identified while the sump and clarifier were being excavated during the LOX Plant removal. As part of an accelerated cleanup program in 1993, the sump, clarifier, and leach pit were excavated and

removed. The plant's concrete foundations were removed in 1996. None of the primary buildings remain at the former LOX Plant location. A truck scale and affiliated controls building are the only remaining structures at the site.

A2LF. The A2LF is an approximate 5.5-acre site that is located in the northern portions of Areas I and II. It was active from approximately 1955 to 1980, but the years of primary use were between 1965 and 1978. The A2LF received unused fill materials, vegetation, some drums of unknown content, and construction debris, including asphalt, timber, vegetation, piping cement, glass, and steel.

AP/STP. The Incinerator AP/STP Area was operational from the mid-1950s through the 1970s. The incinerator portion of the site consisted of a brick structure with a metal smokestack and waste storage pad. The Incinerator was used to burn non hazardous wastes, primarily trash, photographs, and paper. The incinerator and associated structures were demolished in 2006. All concrete foundations, electrical, water, and gas lines also were removed and the area was regraded to the natural slope. The STP was operational from 1961 to 1987 and is now inactive on standby. The site is an approximately 0.5-acre area located north of the Alfa and Bravo Areas. Sewage from Area II flows to the STP, where it is pumped to the STP in Area III. From there it is pumped by vacuum truck and is trucked offsite for treatment. None of the structure has been removed, and the STP still consists of a below grade, concrete-lined unit that includes a accumulator, a source aeration unit, and a clarifier.

REFERENCES

Boeing, 2005. CTL-I / LETF Test Site Summaries. Santa Susana Field Laboratory, Ventura County, CA. HDMSe00242137.

MWH, 2009. RCRA Facility Investigation, Group 1A RFI Report, Santa Susana Field Laboratory. February.

NASA, 2008. Draft RCRA Facility Investigation, Group 2 RFI Report, Santa Susana Field Laboratory, Ventura County. November.

SAIC, 1994. Final RCRA Facility Assessment (RFA) Report. Prepared for Rockwell International Corporation, Rocketdyne Division, Santa Susana Field Laboratory, Ventura County, California. May. HDMSe00008191.

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